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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,664	02/18/2004	Mark H. Shipton	111129.01	8532

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EXAMINER
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JENKINS, DANIEL J

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/779,664

Applicant(s)

SHIPTON ET AL.

Examiner

Daniel J. Jenkins

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4, 6-14 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4, 6-14 and 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1742

1. The Examiner has carefully considered Applicant's Response of 12/15/05.

However, the Examiner does not find Applicant's Remarks and Amendment persuasive.

In particular, the Examiner finds that the thrust of Applicant's remarks to be directed at the to the limitation that the claimed alloy is free of Mo, Ti, V and Nb (resulting in an unexpected result), and wherein the Examiner's primary reference allows for amounts of Mo greater than zero. The Examiner finds that Applicant's argument of unexpected results is at this point in the prosecution of this Application, assertion as presented by Applicant. For a showing of unexpected results to be persuasive, a showing must be given to demonstrate that the lack of the excluded elements in the same or similar composition directly results in an unexpected result. Such a showing has not been made at this time.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 4, 6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al.

Wukusick et al. disclose the invention as claimed. Wukusick et al. disclose at Table 1, page 3, a nickel alloy comprising:

wt%	Wukusick et al.	claimed by Applicant
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Art Unit: 1742

Cr	5-10	4-8
Al	5-7	5-6.5
Co	5-10	2-6
Ta	3-8	4-8
Re	0-6	3-5
Hf	0-0.5	0.1-0.5
C	0-0.07	0.04-0.1
Si	not mentioned	0.05-0.3
B	0-0.015	0.003-0.01
W	3-10	<5
Pt	not mentioned	<5
La	not mentioned	0.003-0.008
Y	0-0.075	0.003-0.008
others	0-2 Mo, 0-2 Ti	not mentioned

Thus, Wukusick et al. teaches alloy elements that substantially or completely overlap

Applicant's claimed range, except for Si.

Naik et al. teach in the same field of endeavor at Abstract and col. 5, lines 46-56, that 0.02-1.0 wt% is added to Ni base alloys for the purpose of improving the oxidation and corrosion resistance of the alloy, without the formation of excessive quantities of low melting compounds.

Art Unit: 1742

It would have been obvious to one having ordinary skill in the art at the time of the invention to add 0.02-1.0 wt% Si as taught by Naik et al. to the invention of Wukusick et al. in order to improve the oxidation and corrosion resistance of the alloy of Wukusick et al.

The alloy of Wukusick et al. may contain further elements, such as Mo and Ti, however, as each of the ranges for these elements includes zero, they may be omitted.

Regarding claim 4, the alloy of Wukusick et al. further contains 3-8 wt% W and 0-0.075 wt% Y. It would have been within the common knowledge of one of ordinary skill in the art at the time of the invention to optimize the content of Y in order to maximize the added oxidation resistance of the alloy (for support see Naik et al. at col. 6, lines 30-36).

Regarding claim 5, Wukusick et al. teach an alloy which consists essentially of Cr, Al, Co, Ta, Re, Hf, C, Si, B, W and Y, with the balance Ni, given that the alloy of Wukusick et al. may contain further elements, such as Mo and Ti, wherein each of the ranges for these elements includes zero.

The values for Al, Ta, Re, C, Si, B and Y fall within the disclosed range of Wukusick et al. in view of Naik et al. It would have been within the expected skill of a routineer in the art to have optimized the composition of these elements in order to maximize chemical and mechanical properties of the alloy. The values of Cr and Co are just outside the ranges disclosed by Wukusick et al., and are close enough (4.5 wt% vs 5.0 wt% Cr and 4 wt% vs 5 wt% Co) that one of ordinary skill in the art would have expected that the two values would yield the same properties. See MPEP 2144.05.

Art Unit: 1742

However, Wukusick et al. in view of Naik et al. disclose value of W outside of the amount as claimed (3-10 wt% vs 2 wt%).

Sato et al. teaches at col. 9, lines 1-8, in the same field of endeavor, to add W in amounts in as small amounts as 2 wt% in order to improve alloy strength.

It would have been obvious to one having ordinary skill in the art to add as little as 2 wt% W in the invention of Wukusick et al. as taught by Sato et al. in order to still maintain strength properties of the alloy while minimizing the alloy effects of W in combination with the other alloying components while still maintaining the desired strengthening effect.

Additionally, Wukusick et al. in view of Naik et al. do not disclose the addition of 0.003-0.008 wt% La, Wukusick et al. silent as to La and Naik et al. at col. 6, lines 30-36 teach to add La in an amount of 0.05-0.4 wt%.

Kondo et al. in the same field of endeavor teaches that La in amounts as low as 0.001-0.02 wt% rare earths (including examples of La) are effective in preventing corrosion (see Abstract and col. 1, lines 13-44).

It would have been obvious to one having ordinary skill in the art at the time of the invention to use La in amounts of 0.001-0.02 wt% as taught by Kondo et al. in the invention of Wukusick et al. in view of Naik et al. since Kondo et al. teaches that amounts as low as this range are effective in preventing corrosion and smaller and effective amounts minimize interaction with other alloying properties.

Art Unit: 1742

4. Claims 7, 11-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. and further in view of Schell et al. (US 5,622,638) and Applicant's admission of prior art.

Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. disclose the invention substantially as claimed (see paragraph 3 above).

However, Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. do not teach the application of the composition to the tip of a gas turbine blade for forming or repair.

Wukusick et al. do teach in his description that his nickel alloy can be used in gas turbine blade applications.

Schell et al. teach to use nickel alloys in a method of applying such alloys to the tip of gas turbine blades for the purpose of repair.

It would have been obvious to use the alloy of Wukusick et al. in view of Naik et al. as a blade tip repair material as taught by Schell et al. in order to have a high temperature corrosion resistant blade tip material.

Regarding claim 11, Applicant admits as prior art (see page 1) that laser deposition (cladding) is a known method of applying blade tip material as applied to Schell.

Regarding claim 12, Schell et al. teach (see claims 1, 7, 8 and 9) a method that includes laser depositing a Ni alloy to the tip of a gas turbine blade to a near-net shape followed by machining to achieve the final shape.

Art Unit: 1742

Regarding claim 13, Schell et al. teach (see claim 9) that the deposition is applied by a laser fusing process.

Regarding claims 14 and 20, Applicant admits as prior art (see page 1) that a conventional blade tip addition is a squealer.

5. Claims 8-10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. and further in view of Mukira et al. (US 6,468,367).

Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. teach the invention substantially as claimed (see paragraph 3 above).

However, Wukusick et al. (GB 2,235,697) in view of Naik et al. (US 5,077,141) and Kondo et al. do not teach a method of repairing a gas turbine blade comprising applying the Ni alloy to a damaged portion to the gas turbine blade.

Mukira et al. teach at col. 1, lines 20-35, that it is common knowledge to apply a repair Ni alloy to a damaged turbine blade by tungsten arc welding process to repair the blade.

It would have been obvious to one having ordinary skill in the art to use a Ni alloy with good temperature properties, as the alloy of Wukusick et al. in view of Naik et al., together with the teaching of Mukira et al. to arrive at the welding repair process.

Regarding claims 9 and 10, Mukira et al. teach (see col. 1, lines 20-35) that the article is a Ni alloy turbine blade.

Regarding claim 19, Schell et al. teach (see claim 9) that the deposition is applied by a laser fusing process.



Art Unit: 1742

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Jenkins whose telephone number is 571-272-1242. The examiner can normally be reached on M-TH6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1242. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel J. Jenkins  
Primary Examiner  
Art Unit 1742

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